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(When filled in)

Support Project Initiation Memorandum (for Non-Scheduled Intelligence Production)	Type B	Control Number S-08907

TO: Production Control Staff.

2. Title or Subject (31)
Line 1 Production of Advanced NC
Line 2 Machine Tools and Controllers
Line 3 in the USSR and Eastern Europe
Line 4
Line 5

3. Analyst(s) & Other Contributors (31)
Line 1
Line 2

Manhours: 6

Completion Date (y m d) 75 09 04

4. Requester and Purpose (39)
Line 1 Mr. Jeremiah F. Kratz, Chairman
Line 2 Technical Task Group 10
Line 3 Mr. Kratz requested a CIA intelligence
Line 4 input in support of COCOM negotiations.
Line 5
Line 6

Classification (39)
Confidential

5. Precis (39)
Line 1 Includes information on Bloc capabili-
Line 2 ties in the production of advanced NC
Line 3 machine tools and their controllers.
Line 4
Line 5
Line 6
Line 7
Line 8

APPROVAL:

Branch (if less than 10 manhours) — Date 4 Sept 75

Division (if 10 manhours or greater) — Date

Director (for special requesters) — Date

Notes: Numbers in parentheses indicate the maximum number of characters and blanks to be inserted in a line—i.e., (16) means no more than 16 spaces.

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4 September 1975

MEMORANDUM FOR: Mr. Jeremiah F. Kratz
Division of International
Security Affairs
Energy Research and
Development Administration

SUBJECT : Production of Advanced NC
Machine Tools and Controllers
in the USSR and Eastern
Europe (IL 1091)

Summary

The USSR, East Germany, Hungary, and Poland are the only countries in Eastern Europe known to have built NC machine tools with capabilities equal to or better, than those specified in the COCOM IL 1091 embargo definition. These models exist mostly in prototype form. The evidence indicates that no Bloc country currently is producing substantial quantities of 3-axis simultaneously controlled machine tools.

USSR

Of the nine Soviet models known to equal or exceed the COCOM IL 1091 embargo definitions (see attached table), six are prototypes and only three currently are being produced. Two of the serially produced models, the 6441PR and LF66F3 milling machines, are equipped with 3-axis simultaneous control and have been produced in small quantities since about 1971. A third model, the 243VF4 machining center equipped with 2-axis simultaneous control, exceeds the COCOM cutoff on resolution.

The Soviet Ministry of the Aviation Industry also produces NC machine tools for its plants.
visited the Ministry's plant at Savelovo. It was apparent that some 3-axis simultaneously

controlled machine tools are produced at Savelovo, but it is not known how many of these machine tools would exceed IL 1091 accuracy cutoffs under the administrative exceptions note. Moreover, although were shown Soviet controllers having 3-axis contouring capability, they later observed, at an aviation institute, the same NC machine tools equipped with foreign controllers. Also, in discussions at Savelovo, the Soviets indicated that they are using foreign-made transducers and resolvers in their feedback mechanisms.

East Germany

East Germany is a leading Bloc producer of NC machine tools and has displayed a prototype DNC/CNC system which would be embargoed under IL 1091. However, because East German controllers lack 3-axis, contouring capability none of its NC systems, including its DNC/CNC system, currently are capable of performing three-axis simultaneous control operations.

Hungary

Hungary has developed a series of NC control units (UNIMERIC) which provide numerical control in up to 5 axis. All appear to be limited to 2-axis simultaneous control. However, Hungary is producing a milling machine under license from the French firm Ratier-Forest equipped with an Italian NC system (San Giorgio) which reportedly can be supplied with a resolution exceeding COCOM cutoffs. There is no evidence that Hungary produces 3-axis continuous path controllers.

Poland

Poland has built a prototype, two-spindle NC milling machine (model FEA 63N) capable of 3-axis simultaneous control. There is no evidence that Poland produces 3-axis continuous path controllers.

Czechoslovakia

At the 1973 Hanover and Brno Exhibitions, Czechoslovak technicians reportedly stated that a 3-axis simultaneous control system would be displayed and operated at the 1975 Leipzig Fair. At the 1975 Fair, however, no 3-axis continuous

path systems were demonstrated and technicians indicated that no such controllers were in serial production.

Any questions concerning this memorandum may be addressed to Jim Grant, 351-6901.

Office of Economic Research

Attachment:
as stated

(S-08907)

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ATTACHMENT

Soviet NC Machine Tools Which Would be Covered Under IL 1091

Model	Type	No. Controlled Axes/ No. Simultaneously Controlled Axes	Minimum Programmable Increment	Positioning Accuracy
243VF4	Machining Center	3/2	0.00004 in	0.0005
6441PR	Milling Machine	3/3	0.0008 in	N.A.
LF66F3	Vertical Milling Machine	3/3	0.002 in	N.A.
6540RF3*	Vertical Milling Machine	3/3	0.0004 in	0.0008
DF-224M*	Milling Machine	5/5	N.A.	N.A.
GT_s-08*	Machining Center	3/3	0.0005 in	0.001 in over 20 in length
LR 205F3*	Horizontal Milling Machine	5/3	N.A.	N.A.
MA 6545*	Profile Milling Machine	5/5	N.A.	N.A.
SFP-3*	Milling Machine	5/5	N.A.	N.A.

* Prototypes, not currently in serial production.

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EXEMPT FROM GENERAL [illegible]
[illegible]
Impossible to determine [illegible]